Submarine Hazardous Materials Program:

Current and Future Efforts for Exposure Assessment through SHIMS, SAHAP and VA Class Hazardous Material Map

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Exposure Assessment: Traditional vs. Submarine

- Traditional
  - Process review including MSDS evaluation
  - Exposure/non-exposure durations
  - Compare to PEL/TLV
- Submarine
  - Process review including MSDS evaluation
  - 24-hour exposures with limited air exchanges
  - Very low allowable exposure levels (often in ppb range)
  - Atmosphere Control Program

Problem:

- How do we control submarine atmosphere contaminants and personal exposures to lowest levels possible?

Solution:

- Change the way we do business
- Three initiatives
  - SHIMS
  - SAHAP
  - VA Class HazMat Map

Submarine HMC&M Program Overview

Objective

Improve the control of hazardous materials (HM) and atmosphere contaminants and increase technical accuracy and usability of the Submarine Material Control List (SMCL) as a HM control & management tool for the U.S. Submarine Force

3-Part Strategy

SHIMS

Fleet tool for SMCL reference and inventory management

SMCL Bottom-up Review

Ensure list is accurate, complete, efficient

SMCL Web Site

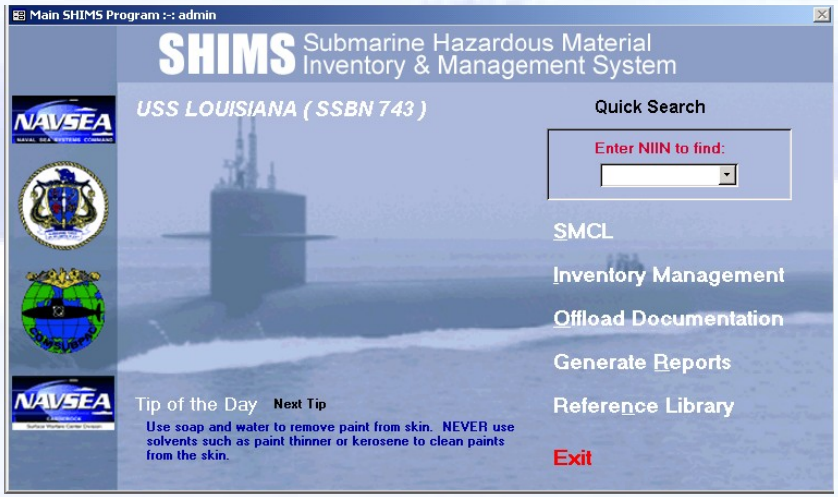
Improve access to SMCL and technical review process

Submarine HM Inventory & Management System (SHIMS)

Submarine HMC&M

- **Issues:**
  - Limited stowage space and strict atmosphere control requirements for HM onboard submarines
  - Need for consolidated/standardized approach for HM inventory management

- **Solution – *SHIMS*:**
  - Comprehensive software management tool
  - Features include authorized use list screening, inventory management, automated reporting, MSDS and reference information
  - Provides Fleet-wide standardization
  - Supports HM lifecycle cost reduction
  - Ensures crew health & safety, increase environmental awareness and


Main SHIMS Program :-: admin
SHIMS Submarine Hazardous Material Inventory & Management System
NAVSEA
USS LOUISIANA (SSBN 743)
Quick Search
Enter NIIN to find:
SMCL
Inventory Management
Offload Documentation
Generate Reports
Reference Library
Exit
Tip of the Day
Next Tip
Use soap and water to remove paint from skin. NEVER use solvents such as paint thinner or kerosene to clean paints from the skin.

SHIMS Status

Submarine HMC&M

- SHIMS Version 1.0 implemented Fleet-wide 2001
- SHIMS Service Release 1 implemented Fleet-wide 2003
- SHIMS Service Release 2 scheduled for Apr 2004
  - Response to COMNAVSUBFOR Submarine HM Stand-up (Dec 2003) feedback:
    - Quarterly SMCL updates
    - Embedded computer-based training
    - Improved LAN access
    - Integrated with R-Supply to eliminate redundant data entry
    - Modified report formats
    - Streamlined MSDS printing
    - Special notification of Use Category changes
    - SMCL downloads via web
    - Ability to archive updated inventories
    - More prominent display of Use Categories
    - Improved management of inventory/location relationships
    - Authorization for SIPRNET installations

Submarine Material Control List (SMCL) Review

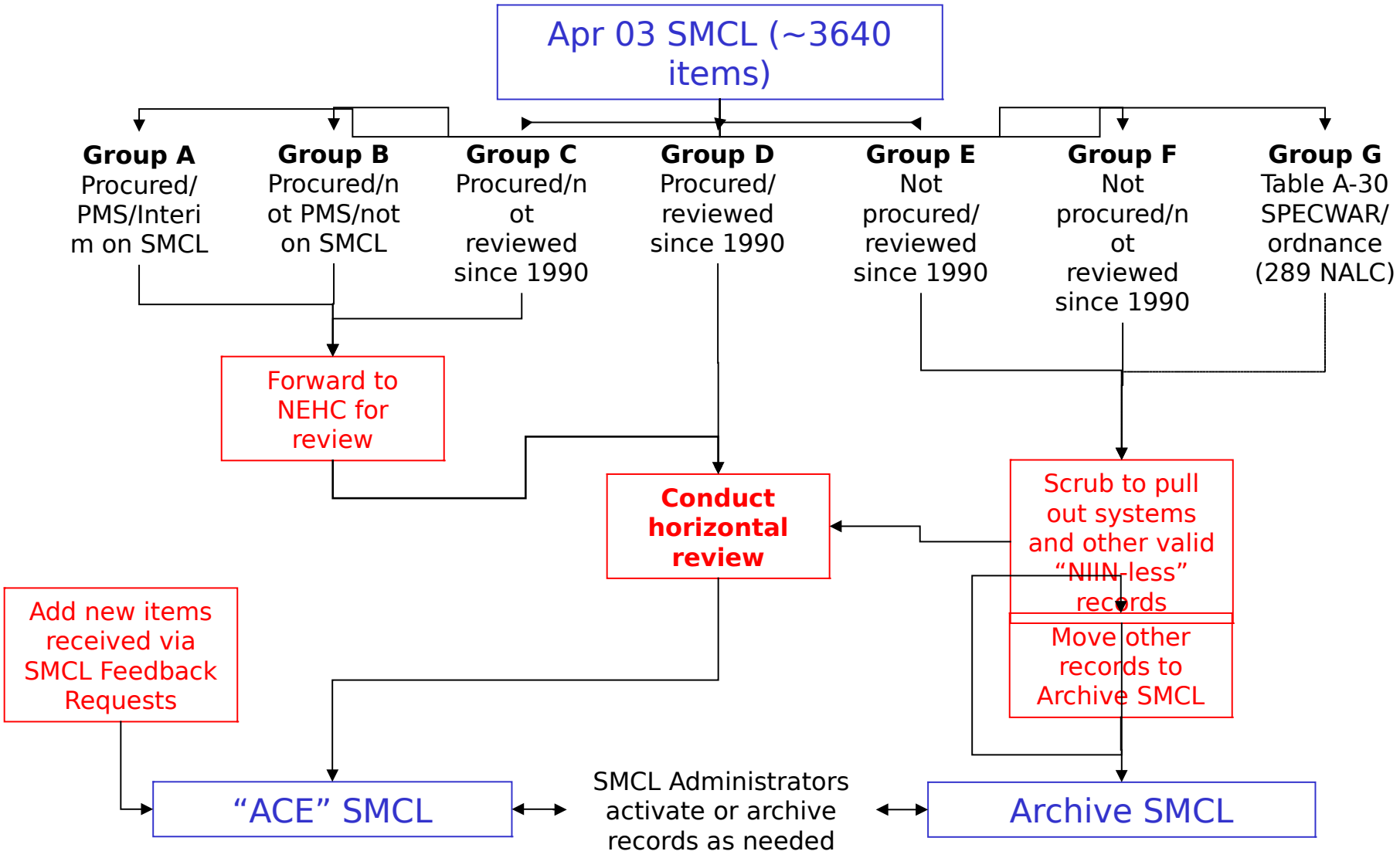
Submarine HMC&M

- **Issues:**
  - SMCL fields missing data
  - Outdated information (Greater than 10 years)
- **Solution - *Bottom-up Review* with goals to achieve:**
  - 100% Use Category population
  - 100% Trade Name & Manufacturer population
  - 100% NEHC report linkages (where possible)
  - 100% MSDS & HCC (where applicable)
  - Detailed “Remarks” and “Application” fields
  - Maximum NIIN population (where possible)
  - Properly categorized in Tables by FSC

Objective = “ACE” SMCL (Accurate, Complete, Efficient)

SMCL Review Process

Submarine HMC&M


Apr 03 SMCL (~3640 items)
Group A Procured/ PMS/Interim on SMCL
Group B Procured/not PMS/not on SMCL
Group C Procured/not reviewed since 1990
Group D Procured/ reviewed since 1990
Group E Not procured/ reviewed since 1990
Group F Not procured/not reviewed since 1990
Group G Table A-30 SPECWAR/ ordnance (289 NALC)
Forward to NEHC for review
Conduct horizontal review
Scrub to pull out systems and other valid "NIIN-less" records
Move other records to Archive SMCL
Add new items received via SMCL Feedback Requests
"ACE" SMCL
SMCL Administrators activate or archive records as needed
Archive SMCL

Horizontal review completed; Awaiting NEHC's documentation to support official Use Categories

SMCL Website

- **Issues:**
  - Need for streamlined workflow process to manage feedback request and material certification reviews
    - Paper-based SMCL Feedback Requests (SFRs) and Material Certification Requests (MCRs) cumbersome
  - Need for improved SMCL data integrity
- **Solution – *Interactive web-based data management system to maintain SMCL* :**
  - Improve visibility and accessibility to SMCL
  - Simplify SMCL Feedback Request (SFR) and Material Certification submittal
  - Streamline material technical review process
  - Provide SMCL and submarine HMC&M information and resources on-line
  - Engage full user community

SMCL Web Functions

Submarine HMC&M

8 Primary Functions:

- [x] 1) Search/view SMCL (records & documentation)
- [x] 2) On-line submittal of SFR/MCR
- [ ] 3) View SFR/MCR status
- [ ] 4) Technical review
- [ ] 5) Help/resources
  - [x] Downloads
  - [x] Links
  - [x] Misc. Info & Documents
- [ ] 6) Administration
- [x] 7) About the SMCL
- [x] 8) My account (security)

} (Undergoing testing)

SMCL Submarine Material Control List
Home
Search/View SMCL
Submit an SFR
View SFR Status
SFR Technical Review
Help/Resources
Links
Page Administration
My Account
About
SMCL Home Page
What's New?
SMCL Web Is a comprehensive web site providing access to current information associated with the Submarine Material Control List (SMCL), the Authorized Use List (AUL) for hazardous materials and potential atmosphere contaminants, used by the U.S. Navy Submarine Force.
Managed by NAVSEA, the SMCL Web Site allows you to search, view, and print the SMCL database, submit and view the status of SMCL Feedback Reports (SFRs), manage the SMCL technical review process using a streamlined, web-based workflow management tool, and download the latest versions of the SMCL database and updates to the Submarine Material Inventory and Management System (SHIMS).
The Web Site also provides an online reference library, helpful links, and other useful information and news. All persons are required to register for an SMCL Web Site user account in order to access the system. For site administration purposes, it is important to maintain current and accurate user account information. To change the information you registered with, click 'My Account'.
Tip of the Day
SMCL Search
There are 3078 items on the SMCL.
Site Map
Do not mix batteries of different chemical types, sizes, or manufacturers
SEARCH

https://smcl.dt.navy.mil

SFR/MCR Submittal

Submarine HMC&M

On-line form is pre-populated with user information to streamline submittal time

SMCL Submarine Material Control List
Home
Search/View SMCL
Submit an SFR
View SFR Status
Help/Resources
Links
Page Administration
My Account
About
Submit a SMCL Feedback Report (SFR)
To submit a SFR, you must complete all the required (*) fields in the form below. In order to facilitate the technical review process, please verify that you have provided as much information as possible about the item. If you do not have the information to complete one of the required field(s) enter 'N/A' in the space provided.
User/Activity Information:
*Posted by (first name): John
*Posted by (last name): Doe
*UIC Number: 05713
*Submarine/Hull Number: SSN 700
*Submarine/Hull Name: USS Make Believe
*Activity POC (name):
Enter the name of the requesting activity's point of contact
*POC Phone:
Enter the phone number of the requesting activity's point of contact
POC E-mail:
Enter the email of the requesting activity's point of contact
*Recommended Action: ADD
Enter the type of action you are requesting for the item
SUBMIT
RESET
Web Coordinator | DoD Warning Banner | Security Notice | Privacy Notice

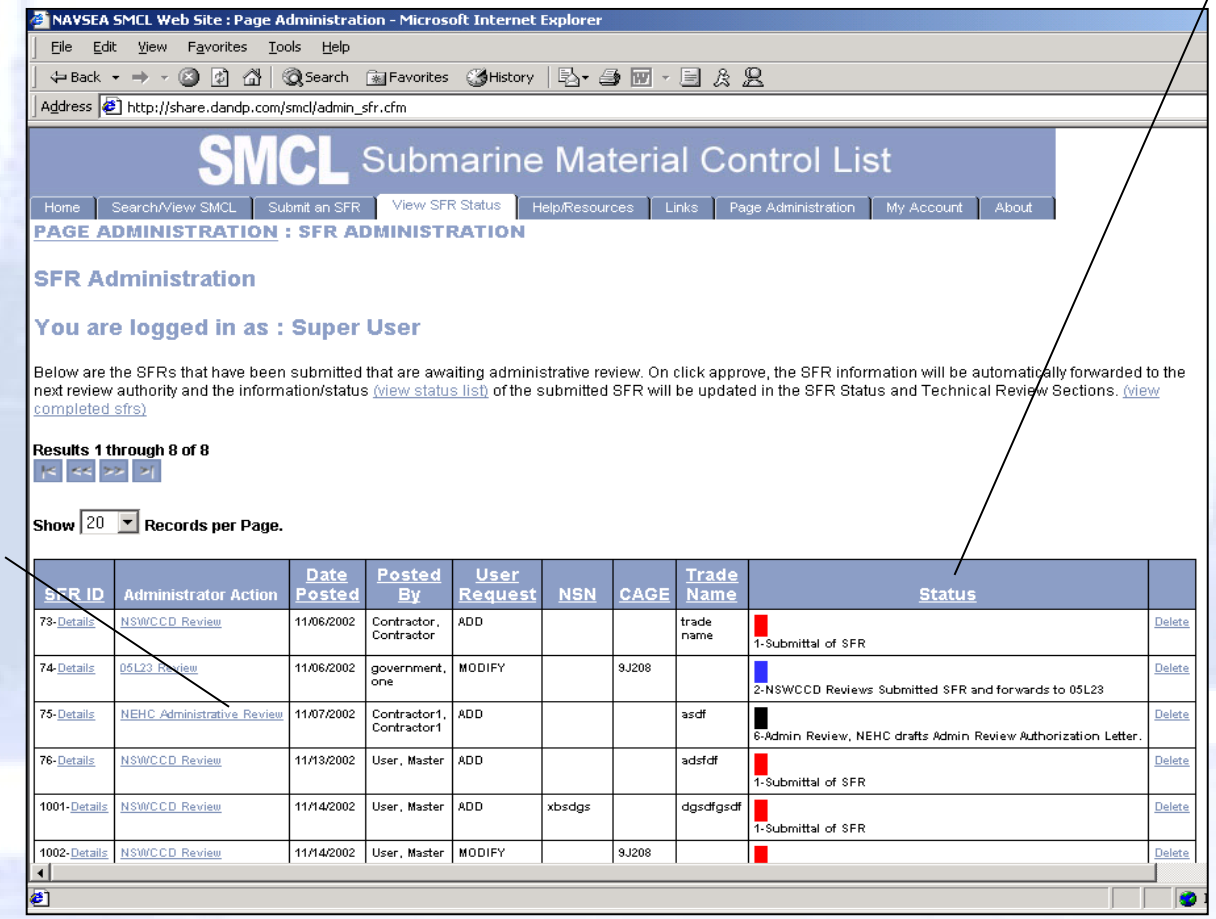
Field descriptions provide guidance for user to ensure info is accurately submitted

SFR/MCR Processing

Submarine HMC&M

SMRB technical reviewers receive email notification when action is needed

SMRB members can easily view & access their "stage" in the process


NAVSEA SMCL Web Site : Page Administration - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://share.dandp.com/smcl/admin_sfr.cfm
SMCL Submarine Material Control List
Home
Search/View SMCL
Submit an SFR
View SFR Status
Help/Resources
Links
Page Administration
My Account
About
PAGE ADMINISTRATION : SFR ADMINISTRATION
SFR Administration
You are logged in as : Super User
Below are the SFRs that have been submitted that are awaiting administrative review. On click approve, the SFR information will be automatically forwarded to the next review authority and the information/status (view status list) of the submitted SFR will be updated in the SFR Status and Technical Review Sections. (view completed sfrs)
Results 1 through 8 of 8
Show 20 Records per Page.
SFR ID | Administrator Action | Date Posted | Posted By | User Request | NSN | CAGE | Trade Name | Status
73-Details | NSWCCD Review | 11/06/2002 | Contractor, Contractor | ADD | | | trade name | 1-Submittal of SFR | Delete
74-Details | 05L23 Review | 11/06/2002 | government, one | MODIFY | | 9J208 | | 2-NSWCCD Reviews Submitted SFR and forwards to 05L23 | Delete
75-Details | NEHC Administrative Review | 11/07/2002 | Contractor1, Contractor1 | ADD | | | asdf | 6-Admin Review, NEHC drafts Admin Review Authorization Letter. | Delete
76-Details | NSWCCD Review | 11/13/2002 | User, Master | ADD | | | adsfdf | 1-Submittal of SFR | Delete
1001-Details | NSWCCD Review | 11/14/2002 | User, Master | ADD | xbsdgs | | dgsdfgsdf | 1-Submittal of SFR | Delete
1002-Details | NSWCCD Review | 11/14/2002 | User, Master | MODIFY | | 9J208 | | | Delete

Summary

Submarine HMC&M

Objective

Improve the control of hazardous materials (HM) and atmosphere contaminants and increase technical accuracy and usability of the SMCL as an HMC&M tool for the U.S. Submarine Force

SHIMS

Fleet tool for SMCL reference and inventory management

Installed Fleet-wide. Tech support on-going via data conversion and Service Releases

SMCL Bottom-up Review

Ensure list is accurate, complete, efficient

Primary efforts completed. Current actions include NEHC reviews.

SMCL Web Site

Improve access to SMCL and technical review process

Primary system launched 2002. Technical review module completed, pending trial use.

Remaining Challenges

- Integration of HMC&M functional requirements into Relational Supply System (R-Supply) and Organizational Maintenance Management System, the Next Generation (OMMS NG) to:
  - Eliminate Redundant data entry between supply system and SHIMS
  - Incorporate HMC&M compliant functions as a part of supply system
  - Imbed SMCL requirement into the requisitioning process

The Way Ahead

Submarine HMC&M

- Continuing life-cycle technical support *while*...
- Working toward optimal program end-state:

***Efficiently** administers potential HM and atmosph*
taminants from initial identification through offload

***Fully integrates** key HMC&M functionality into the boat's*
supply system to streamline inventory management

***Incorporates** environmental, safety & health (ESH)*
considerations into submarine technical review process

Team Submarine Acquisition Programs

- How Does Acquisition Support Reduction of Personnel Exposure?
- Changes in Acquisition Focus
  - Original Focus: Obtain System at the Lowest Cost
  - Current Focus: Obtain System at the Lowest Lifecycle Cost
- Objective to Limit Lifecycle Exposures
  - Design
  - Construction
  - O&M
  - Disposal

VIRGINIA Class Hazardous Materials Avoidance List

Acetone	Chloroform	2-Methoxyethanol	Sodium Arsenite
Acetylaminaozo Benzene	Chromium	Methyl Bromide	Sodium Chromate
Alpha-Naphthylamine	Dichlorobenzene	Methyl Ethyl Ketone	Sulfamic Acid
4-Aminodiphenyl	4-Dimethylaminoa-zobenzene	Methyl Isobutyl Ketone	1,1,2,2-Tetrachloroethane
Aniline	4,4 Dimethylaniline	Methylene Chloride	Tetrachloroethylene
Arsenic	Ethyl Alcohol	4,4’ Methylene bis (2-Chloroaniline)	Tetraethyl Pyrophosphate (TEPP)
Asbestos	Ethylene Dichloride	Nickel	Toluene
Benzene	Ethylene Glycol	4-Nitrobiphenyl	Toluene Diisocyanate (mixed isomers)
Hexachlorobenzene	Ethylene Oxide	2-Nitropropane	Tributyltin Oxide (TBTO)
Benzidene	Ethyleneimine	Nitrosamine	1,1,2-Trichloro-1,2,2-trifluoroethane
Beryllium	Formaldehyde	Nitrosodimethylamine	Trichloroethylene
Beta-Naphthylamine	Hydrazine	Ortho-Chloroaniline	Trichloroisocyanuric Acid
Beta-Propiolactone	Hydrochloric Acid	Paradichlorobenzene	Triorthocreyslphosphate
Bromine	Hydrogen Cyanide	Perfluorooctyl Sulfonates (PFOS	Vinyl chloride
Cadmium	Lead	Phenol	Xylene (mixed isomers)
Calcium Hypochlorite	Lithium Hydroxide	Polychlorinated Biphenyls	Zinc Chromate
Carbon Disulfide	Mercury	Pyridine	
Carbon Tetrachloride	Methanol	Selenium	
Chlorine	Methoxychlor (DMDT)	Silver	

Design/Build Environmental Analysis

&M

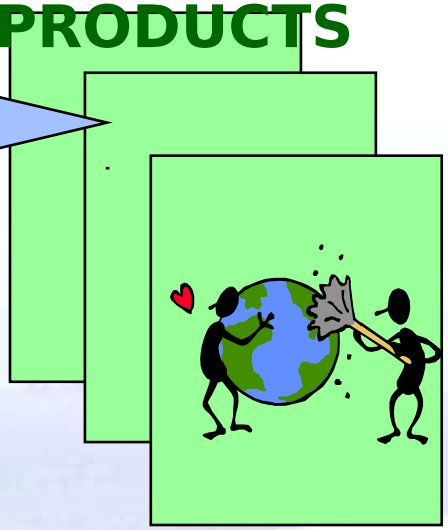
DESIGN DOCUMENTS

- DRAWINGS
- PARTS CATALOG
- TEST PROCEDURES
- SHIP MAINTENANCE DOCUMENTS

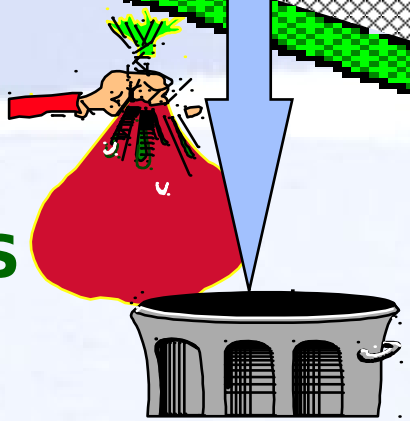
ESOH FILTER

- IDENTIFY LIABILITIES
  - HAZMATS
  - SAFETY HAZARDS
- CONSIDER ALTERNATIVES

ESOH CONSIDERATIONS INCORPORATED IN PRODUCTS

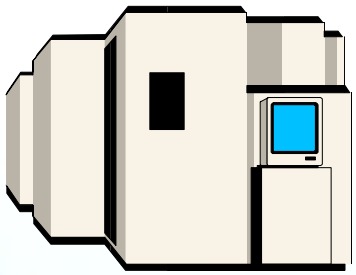


LIABILITIES

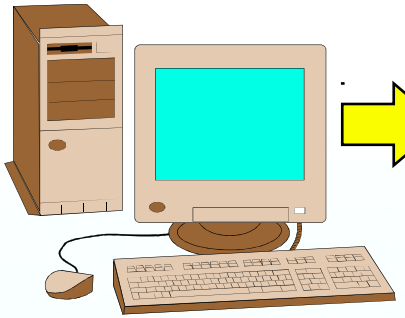


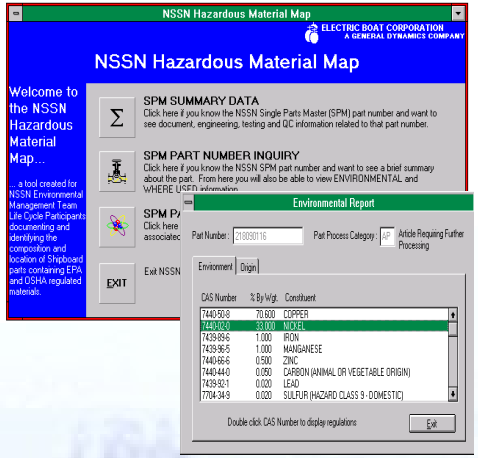
Hazardous Material Map (HazMat Map)

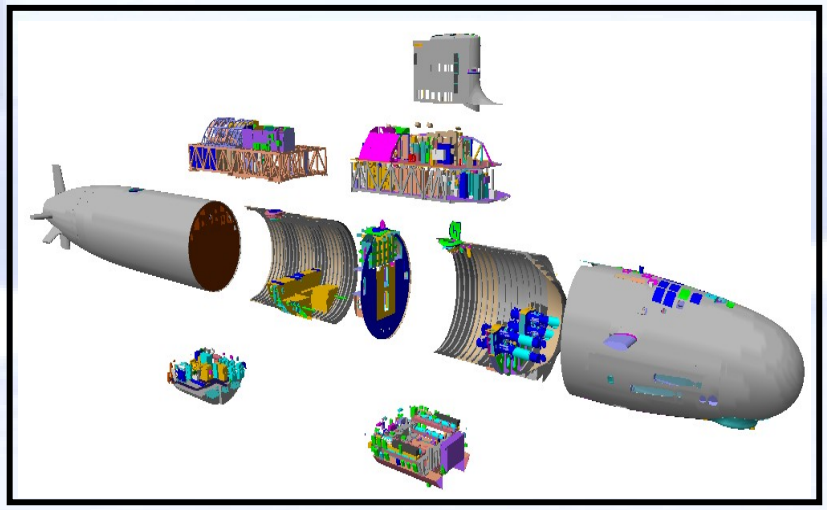
DESIGN / BUILD TEAM



SUBMARINE DESIGN DATA



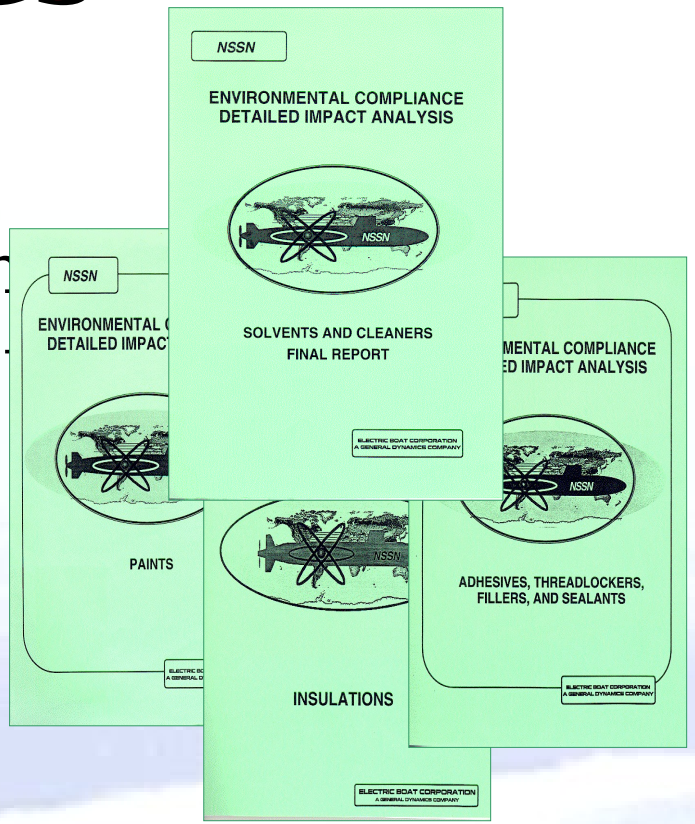




WHERE USED

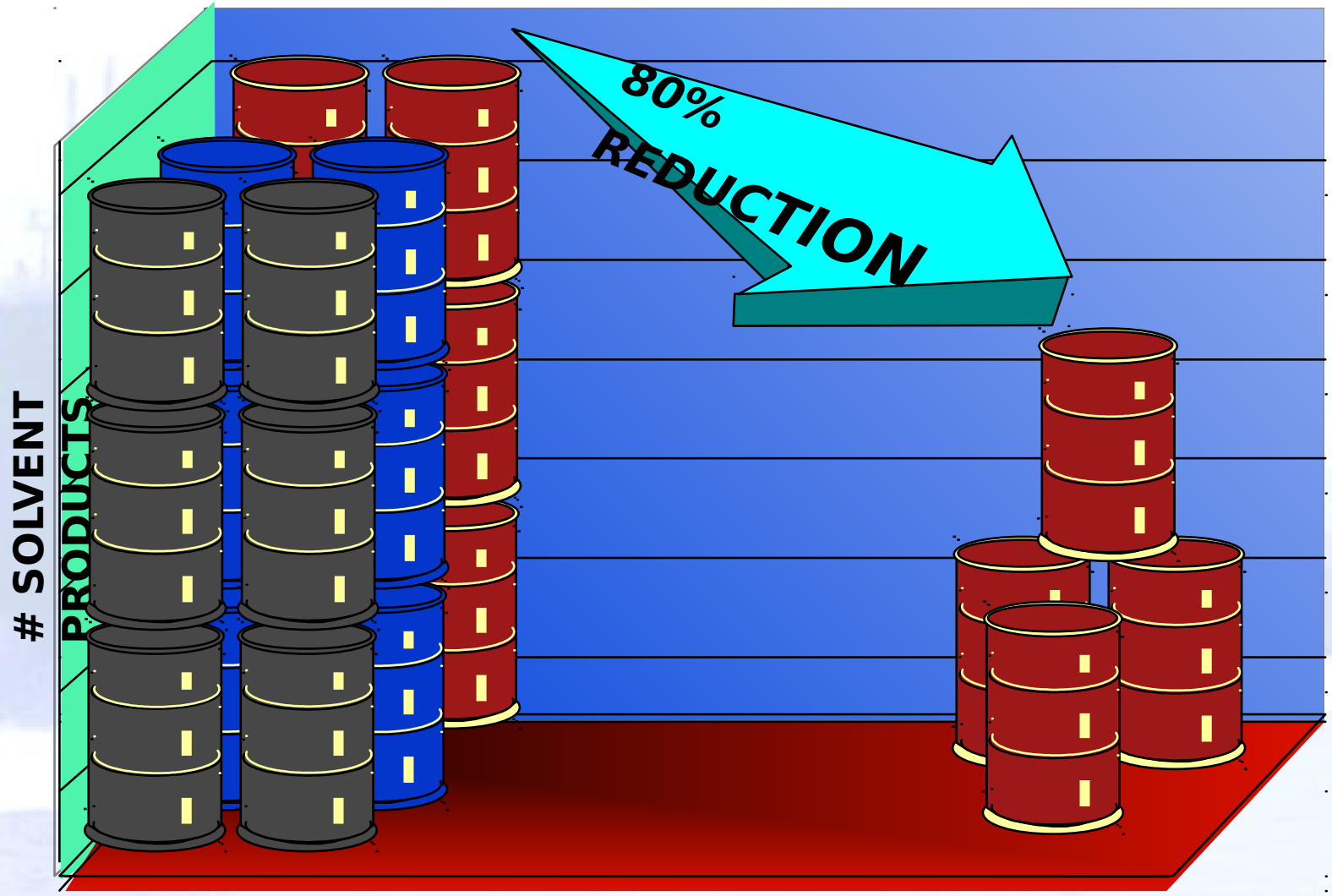
Detailed Impact Analyses (DIAs) Reduce the Number of Consumables

- DIAs
  - Make It Easier to Decide Which Products to Specify in the Design
  - Make It Easier to Choose Correct Products to Use in Construction
  - Help Reduce Waste
  - Help Consolidate Inventories



DIAs Were Performed for Paints, Solvents, Adhesives and Other Consumables, and for Testing, Bonding, Welding and Other Industrial Processes.

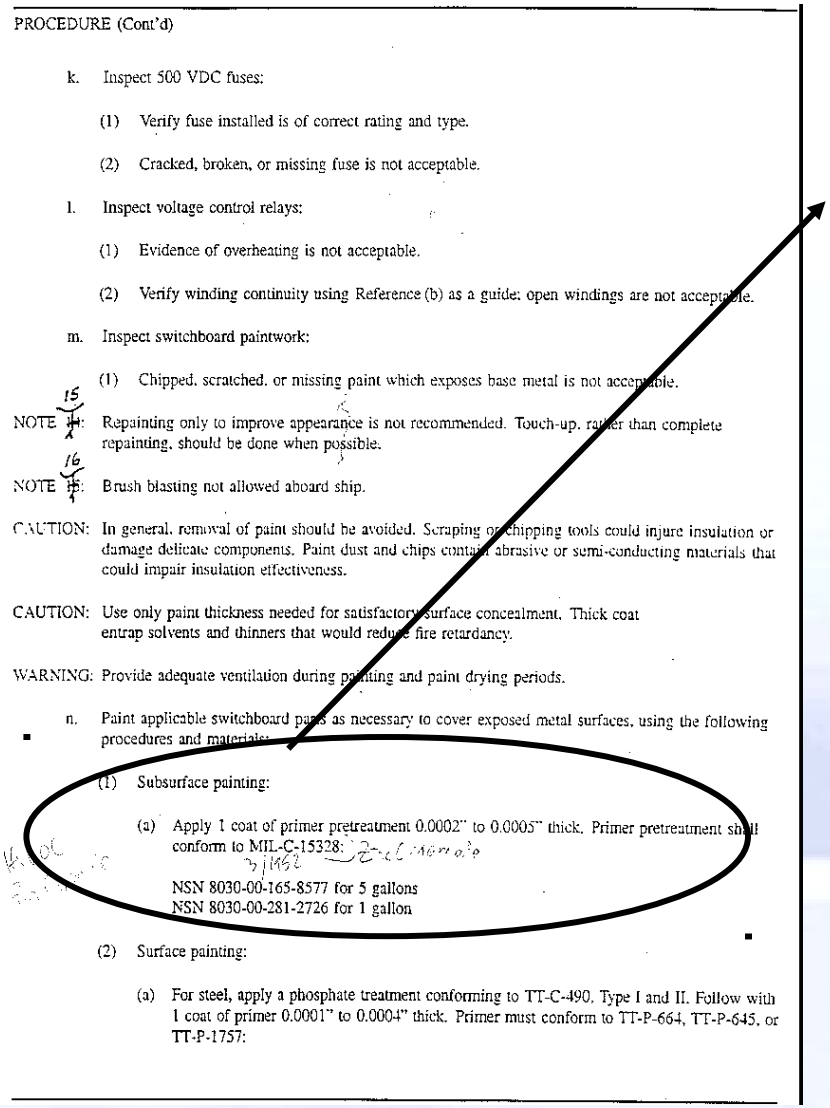
Reduction of Solvents



Previous Submarine Classes

VIRGINIA Class

ESOH Improvements



PROCEDURE (Cont'd)

k. Inspect 500 VDC fuses:

(1) Verify fuse installed is of correct rating and type.

(2) Cracked, broken, or missing fuse is not acceptable.

l. Inspect voltage control relays:

(1) Evidence of overheating is not acceptable.

(2) Verify winding continuity using Reference (b) as a guide; open windings are not acceptable.

m. Inspect switchboard paintwork:

(1) Chipped, scratched, or missing paint which exposes base metal is not acceptable.

NOTE 15: Repainting only to improve appearance is not recommended. Touch-up, rather than complete repainting, should be done when possible.

NOTE 16: Brush blasting not allowed aboard ship.

CAUTION: In general, removal of paint should be avoided. Scraping or chipping tools could injure insulation or damage delicate components. Paint dust and chips contain abrasive or semi-conducting materials that could impair insulation effectiveness.

CAUTION: Use only paint thickness needed for satisfactory surface concealment. Thick coat entrap solvents and thinners that would reduce fire retardancy.

WARNING: Provide adequate ventilation during painting and paint drying periods.

n. Paint applicable switchboard parts as necessary to cover exposed metal surfaces, using the following procedures and materials:

(1) Subsurface painting:

(a) Apply 1 coat of primer pretreatment 0.0002" to 0.0005" thick. Primer pretreatment shall conform to MIL-C-15328:

NSN 8030-00-165-8577 for 5 gallons
NSN 8030-00-281-2726 for 1 gallon

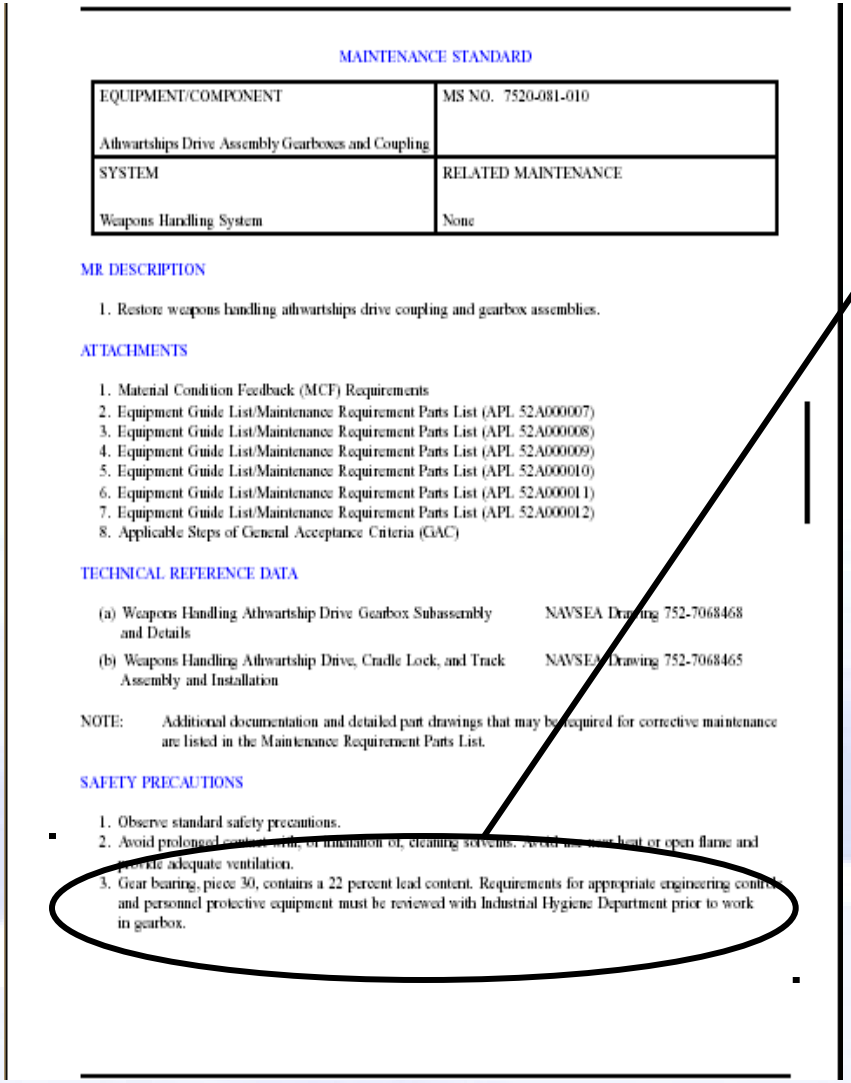
(2) Surface painting:

(a) For steel, apply a phosphate treatment conforming to TT-C-490, Type I and II. Follow with 1 coat of primer 0.0001" to 0.0004" thick. Primer must conform to TT-P-664, TT-P-645, or TT-P-1757:

"Primer pretreatment shall conform to MIL-C-15328:
NSN 8030-00-165-8577 for 5 gallons
NSN 8030-00-281-2726 for 1 gallon"

- Problem
  - –Product per NSN contains zinc chromate & high VOCs
  - –VIRGINIA,and SSGN hazmat lists carcinogen
- Solution
  - –Investigated product call-out
  - –Recommended SMCL/ environmentally acceptable MIL-SPEC/products

ESOH Improvements



MAINTENANCE STANDARD

EQUIPMENT/COMPONENT	MS NO. 7520-081-010
Athwartships Drive Assembly Gearboxes and Coupling	
SYSTEM	RELATED MAINTENANCE
Weapons Handling System	None

MR DESCRIPTION

1. Restore weapons handling athwartships drive coupling and gearbox assemblies.

ATTACHMENTS

1. Material Condition Feedback (MCF) Requirements
2. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000007)
3. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000008)
4. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000009)
5. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000010)
6. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000011)
7. Equipment Guide List/Maintenance Requirement Parts List (APL 52A000012)
8. Applicable Steps of General Acceptance Criteria (GAC)

TECHNICAL REFERENCE DATA

(a) Weapons Handling Athwartship Drive Gearbox Subassembly and Details — NAVSEA Drawing 752-7068468

(b) Weapons Handling Athwartship Drive, Cradle Lock, and Track Assembly and Installation — NAVSEA Drawing 752-7068465

NOTE: Additional documentation and detailed part drawings that may be required for corrective maintenance are listed in the Maintenance Requirement Parts List.

SAFETY PRECAUTIONS

1. Observe standard safety precautions.
2. Avoid prolonged contact with skin or inhalation of, cleaning solvents. Avoid hot heat or open flame and provide adequate ventilation.
3. Gear bearing, piece 30, contains a 22 percent lead content. Requirements for appropriate engineering controls and personnel protective equipment must be reviewed with Industrial Hygiene Department prior to work in gearbox.

"Gear bearing, piece 30, contains 22 percent lead. Requirements for appropriate engineering controls and personal protective equipment must be reviewed with Industrial Hygiene Department prior to work in gearbox."

- Problem
  - –Document had no lead warning VIRGINIA, SSGN, and CVN21 hazmat lists carcinogen
- Solution
  - –Added Safety Precaution for piece-part containing lead

SSGN ESOH Program

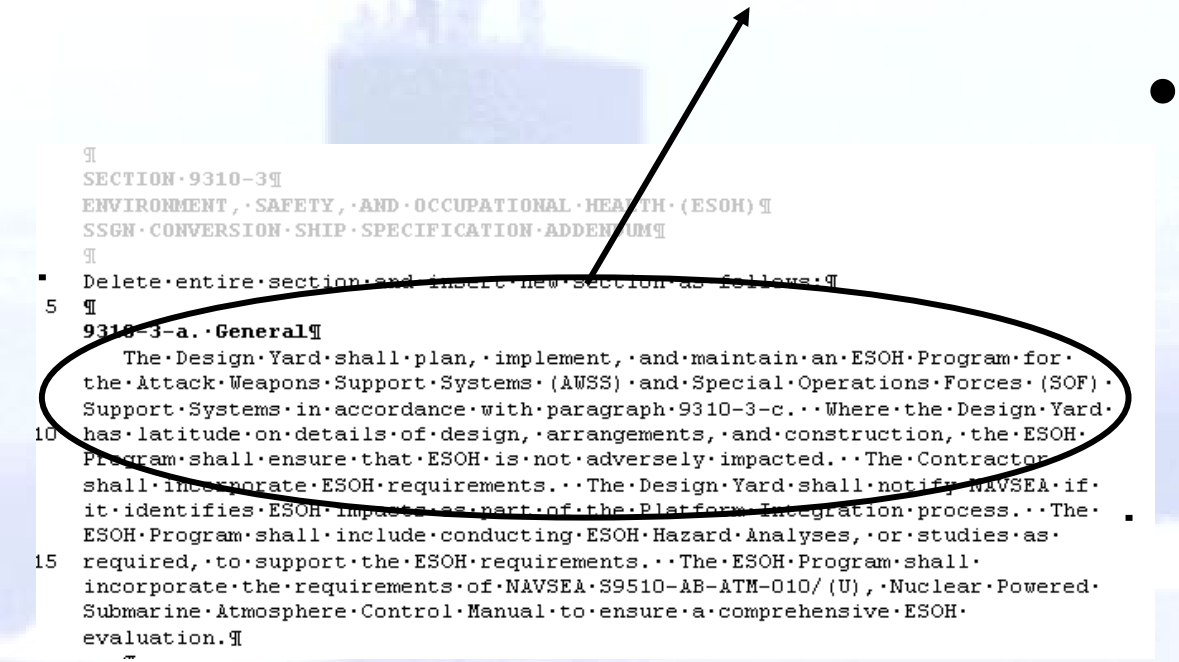
&M

- Leverage off of VIRGINIA Class
- ESOH and System Safety IPTs
- ESOH Hazard Analysis
  - Integrate Environmental and System Safety
- Manage All ESOH Hazards in a Single Database
  - Provides a Single Process to Identify, Track and Resolve ESOH Hazards

SSGN Ship Specification SECTION 9310-3

*&M

"The Design Yard shall plan, implement, and maintain an ESOH Program for the Attack Weapons Support Systems (AWSS) and Special Operations Forces (SOF) Support Systems…"



¶
SECTION·9310-3¶
ENVIRONMENT,·SAFETY,·AND·OCCUPATIONAL·HEALTH·(ESOH)¶
SSGN·CONVERSION·SHIP·SPECIFICATION·ADDENDUM¶
¶
Delete·entire·section·and·insert·new·section·as·follows:¶
¶
9310-3-a.·General¶
The·Design·Yard·shall·plan,·implement,·and·maintain·an·ESOH·Program·for·the·Attack·Weapons·Support·Systems·(AWSS)·and·Special·Operations·Forces·(SOF)·Support·Systems·in·accordance·with·paragraph·9310-3-c.··Where·the·Design·Yard·has·latitude·on·details·of·design,·arrangements,·and·construction,·the·ESOH·Program·shall·ensure·that·ESOH·is·not·adversely·impacted.··The·Contractor·shall·incorporate·ESOH·requirements.··The·Design·Yard·shall·notify·NAVSEA·if·it·identifies·ESOH·impacts·as·part·of·the·Platform·Integration·process.··The·ESOH·Program·shall·include·conducting·ESOH·Hazard·Analyses,·or·studies·as·required,·to·support·the·ESOH·requirements.··The·ESOH·Program·shall·incorporate·the·requirements·of·NAVSEA·S9510-AB-ATM-010/(U),·Nuclear·Powered·Submarine·Atmosphere·Control·Manual·to·ensure·a·comprehensive·ESOH·evaluation.¶

- For the first time in a major submarine acquisition program, a specification was developed for ESOH requirements

Maintenance Follow Through

O&M

- Invoked the SMCL as the Authorized Use List for submarines:
  - OPNAVINST 5100.19
  - Joint Fleet Maintenance Manual (JFMM)
  - SUBMEPP Work Availability Packages

Submarine Acquisition Programs

O&M

- Limit Lifecycle Exposures
  - Design
  - Construction
  - O&M
  - Disposal
- Supports Reduction in Personnel Exposures

Questions?